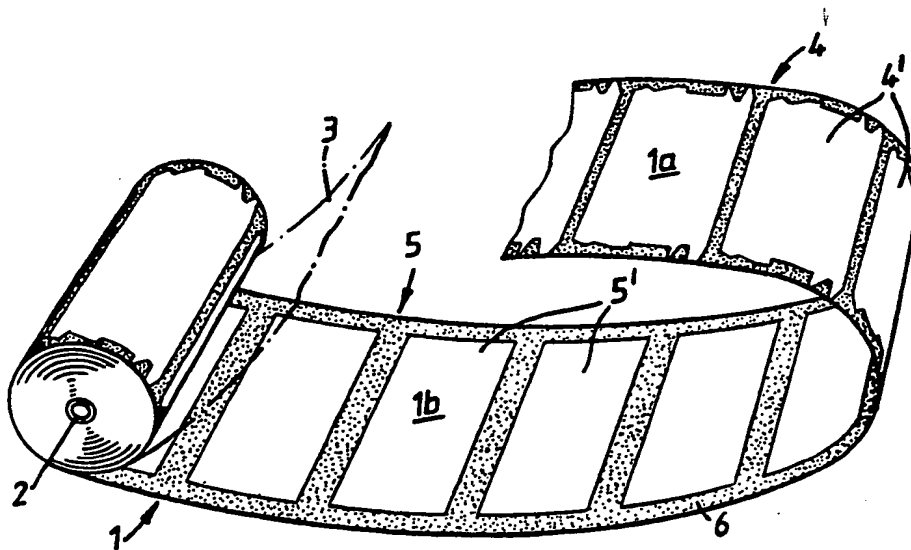


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(54) Title: IMPROVEMENTS IN AND RELATING TO WRAPPING FOOD PRODUCTS



(57) Abstract

A method of wrapping a food product comprising unwinding from a reel (2) a web of wrapping material (1) having on each of its "a" and "b" surfaces, (1a) and (1b), respectively, areas (5) extending along each edge portion and to which a cold-seal adhesive (6) has been applied, and one or more central blank areas (4', 5'), the web of wrapping material having been wound onto the reel together with a web of interleaving material (3). The web (1) is severed transversely into sheets and each sheet wrapped around the food product. The portions of the sheet adjacent to the severed edges are sealed to each other to form a tube, the portions of the wrapping material adjacent to the open ends of the tube then being folded and pressed onto the end faces of the food product to form sealed closures.

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"Improvements in and relating to wrapping food products"

The invention relates to wrapping food products, and especially to wrapping food products using a method known as "roll wrap".

5 The roll wrap method of wrapping a food product, for example, a food product comprising an assembly of disk-like items, especially biscuits, arranged substantially co-axially, involves placing the food product on a sheet of heat-sealable wrapping material that has been severed
10 from a web of such material, with the longitudinal axis of the food product parallel to the severed edges of the sheet. The sheet is wrapped around the food product to form an open-ended tube around the product, the portions of the sheet adjacent to the severed edges being heat-
15 sealed together to form a longitudinal seam extending parallel to the axis of the food product. The open end portions of the tube, which extend beyond the ends of the food product, are then closed by folding them and tucking in the resulting folds against the end surfaces of the
20 food product, and the folds are heat-sealed together using hot sealing plates pressed onto each end surface to form moisture-proof closures. The surface of the sheet that forms the outer surface of a pack formed in such a manner will be referred to as the "a" surface and its
25 other surface (that which forms the inner surface of the pack) as the "b" surface.

There are well-established methods of folding the open end portions of the tube of wrapping material

against the end surfaces of the food product, and with each of those methods the number of layers of wrapping material at each of the end surfaces of the food product varies from one part of the end surface to another. At
5 some places, there may be six or more layers of the material, whereas in other places there may be only a single layer. In order to ensure that the resulting pack is moisture-proof, the sealing process must be capable of heat-sealing the "a" surface of each of the layers to the
10 "a" surface of the or each adjacent layer, and also be capable of heat-sealing the "b" surface of each layer to the "b" surface of the or each adjacent layer. It may also be necessary or desirable that there should be heat-sealing between adjacent "a" and "b" surfaces.

15 If the sealing plates applied to the end surfaces of the packs are at high temperatures, there is a risk of damage to, or deterioration of, the food product, for example, fat separation or the softening or melting of the coating of a chocolate-coated product, especially
20 where there is only a single thickness, or only a few thicknesses, of the wrapping material. If lower temperatures are used, the process is slow because the sealing plates must be maintained in contact with the end surfaces of each pack for a time sufficient for all the
25 layers to reach the temperature necessary for them to be sealed together.

In addition to the above difficulties, there is also a risk of damage to the food product arising from

pressing the sealing plates onto the end surfaces,
because they must be applied with sufficient force to
effect the seal.

The invention provides a method of wrapping a food
5 product, which comprises unwinding from a reel a web of
wrapping material having on each of its surfaces
(hereinafter referred to as its "a" and "b" surfaces,
respectively) areas to which a cold-seal adhesive (as
hereinafter defined) has been applied, the web of
10 wrapping material having been wound onto the reel
together with a web of interleaving material so that the
cold-seal adhesive on the "a" surface of each winding of
the wrapping material is separated from, and prevented
from adhering to, the cold-seal adhesive on the "b"
15 surface of the adjacent winding of the wrapping material,
the areas of the wrapping material to which the cold-seal
adhesive has been applied extending along each edge
portion of each of the "a" and "b" surfaces of the web
with one or more blank areas, to which no cold-seal
20 adhesive has been applied, extending along the central
portion of each of the "a " and "b" surfaces, and the
method also comprises severing the web transversely at
predetermined intervals along its length into sheets,
wrapping each sheet around the food product with its "a"
25 surface facing outwards and its "b" surface facing
inwards, sealing to each other the portions of the sheet
adjacent to the severed edges of the sheet to form a
longitudinal seam extending along th length of the food

product and thereby form a tube of greater length than the food product around the product, and folding and pressing the portions of the wrapping material adjacent to the open ends of the tube, which portions have cold-seal adhesive on at least a part of each of their "a" and "b" surfaces, flat onto the end faces of the food product to form sealed closures at each end.

The term "cold-seal adhesive" is used throughout the specification to refer to a composition that, when it has been applied to a surface, can adhere at ambient temperature to the same or a similar composition that has been applied to a different part of the surface or to a different surface and excludes adhesives that require to be activated by heat.

By using cold-seal adhesive on the wrapping material to effect the sealed closures at the ends of a pack formed from that wrapping material in accordance with the invention, the speed of the wrapping process can be significantly increased without the risk of damage to the food product arising from the application of heat. In addition, although to ensure a seal the portions of the wrapping material adjacent to the open ends of the tube are pressed flat onto the end faces of the food product, less pressing force is needed than in a heat-sealing process, and consequently the risk of damage to the food product caused by the pressing force is also decreased.

The area of cold-seal adhesive extending along each edge portion of the "a" surface of the web of wrapping

material may be a strip of substantially constant width. With such an arrangement, small portions of the strips of cold-seal adhesive will inevitably be exposed on the exterior of the sealed end faces of each pack. It is, however, possible to arrange that the exposed portions of adhesive are sufficiently small in extent that any adhesion occurring between adjacent end surfaces of adjacent packs when the packs are arranged end-to-end and in contact with one another (which might occur in commercial production or in subsequent handling) is insufficient to cause the packs to be opened upon their separation from each other.

Alternatively, the said areas of cold-seal adhesive extending along the edge portions of the "a" surface of the web of wrapping material may be at least the greater part and, preferably, substantially all that part, of the "a" surface of the wrapping material that is to be folded flat onto the end surfaces of the food products and is not to be exposed to the exterior when the sealed closures are formed. The configuration of those areas of the "a" surface will depend on the configuration of the folds to be formed at each end. Before the web of wrapping material is severed into sheets, those areas of the "a" surface will generally extend along each of the edge portions of the web of wrapping material in a repeating pattern of projecting and re-entrant portions. With such an arrangement, the aim is for the areas of the cold-seal adhesive along the edge portions of the "a"

surface to be confined to those areas that will be within the folds of the sealed end closures so that none of the adhesive will be exposed on the sealed end faces. In commercial practice, however, some variation in the configuration of the folds formed at the ends of the packs may lead to some exposure of the adhesive, but again it is possible to arrange that the extent of any such exposure is insufficient to cause a handling problem.

10 The area of cold-seal adhesive along each edge portion of the "b" surface of the web of wrapping material is advantageously a strip of substantially constant width, which may extend continuously along each edge portion or may be interrupted by blank areas
15 corresponding to those areas of the "b" surface that will, or are intended to, be in contact with the food product when the sealed closures are formed at the ends of the packs.

20 The longitudinal seam extending along the length of the food product may be formed by heat-sealing together portions of the sheet adjacent to the severed edges of the sheet. Such a seam may be formed either with the "b" surfaces of the said portions in contact with each other, or with the "b" surface of one such portion in contact
25 with the "a" surface of the other.

Alternatively, the areas of the wrapping material to which the cold-seal adhesive has been applied may include portions of the surfaces of the web adjacent to lines

When the longitudinal seam is, instead, to be formed by pressing the "b" surface of one edge portion of a sheet onto the "a" surface of the other edge portion of that sheet, then each of the "a" and "b" surfaces of the web will generally have an area of cold-seal adhesive on them in the form of a strip extending transversely across the web at the said predetermined intervals, each of such strips on the "a" surface being on one side of lines along which the web is to be severed into sheets and each of such strips on the "b" surface being on the other side of those lines.

The cold-seal adhesive is advantageously a latex composition, preferably, a natural or synthetic rubber latex composition. The cold-seal adhesive is advantageously applied to the said areas of the "a" and "b" surfaces of the wrapping material by printing it on the said surfaces in the form of an aqueous dispersion and allowing the surfaces to dry.

The interleaving material is advantageously a polyester or polypropylene film having a thickness within the range of, for example, 7 to 9×10^{-6} m, or a paper having "non-stick" or "release" surfaces, for example, silicone surfaces.

As the wrapping material is unwound from the reel, the web of interleaving material, which also unwinds, is advantageously rewound.

The invention also provides a web of wrapping material for a food product, the web having on each of

along which the web is to be severed into sheets, and the longitudinal seam is formed either by bringing into contact with each other, and pressing together, the "b" surfaces of the said portions, or by pressing the "b" surface of one such portion onto the "a" surface of the other.

When the longitudinal seam is to be formed by bringing the "b" surfaces of the portions of the sheet adjacent to the severed edges into contact with each other, thus forming a so-called "fin seal", then the "b" surface of the web will generally have an area of cold-seal adhesive on it in the form of strips extending transversely across the web at the said predetermined intervals on each side of the lines along which the web is to be severed into sheets. For reasons of appearance, it is generally preferred that such a longitudinal fin seal should lie flat on the curved surface of the pack. Advantageously, therefore, the "a" surface of the web also has an area of cold-seal adhesive on it in the form of a strip extending transversely across the web on one side of the said lines such that, when a sheet is severed from the web and the "b" surfaces of the portions adjacent to the severed edges of the sheet are brought into contact with each other to form a tube around the food product, the "a" surface of one of those edge portions can then be caused to adhere to an adjacent area of the "a" surface of the sheet that forms part of the curved surface of the tube.

its "a" and "b" surfaces areas to which a cold-seal adhesive (as hereinbefore defined) has been applied, the web of wrapping material being wound together with a web of interleaving material onto a reel so that the cold-seal adhesive on the "a" surface of each winding of the wrapping material is separated from, and prevented from adhering to, the cold-seal adhesive on the "b" surface of the adjacent winding of the wrapping material by the interleaving material, the areas of the wrapping material to which the cold-seal adhesive has been applied extending along each edge portion of each of the "a" and "b" surfaces of the web with one or more blank areas, to which no cold-seal adhesive has been applied, extending along the central portion of each of the "a" and "b" surfaces, and the arrangement of the wrapping material is such that, when the web of wrapping material is unwound from the reel and severed transversely at predetermined intervals along its length into sheets, each sheet is wrapped around a generally cylindrical food product of a length equal to or less than the width (perpendicular to the edges of the web) of the blank central area on the "a" surface and a circumference less than the length of the sheet, the sheet being wrapped around the food product with its "a" surface facing outwards and its "b" surface facing inwards, and the portions of the sheet adjacent to the severed edges of the sheet are sealed to each other to form a longitudinal seam extending along the length of the food product and thereby form a tube of

greater length than the food product around the product, the portions of the wrapping material adjacent to the open ends of the tube, which portions have cold-seal adhesive on at least a part of each of their "a" and "b" surfaces, can be folded and pressed flat onto the end faces of the food product so as to form sealed closures at each end.

The invention further provides a food product wrapped by the method of the invention.

10 Three forms of a web of wrapping material for a food product, and three forms of a method of wrapping a food product, in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

15 Fig. 1 is a diagrammatic end view of the first form of a web of wrapping material, and a web of interleaving material as they are wound onto a reel;

Fig. 2 is a diagrammatic perspective view of the first form of the web of wrapping material and web of interleaving material, on a larger scale than Fig. 1, showing "a" and "b" surfaces of the wrapping material;

Fig. 3 is a diagrammatic plan view, on a larger scale than Fig. 2, of a portion of the "b" surface of the web of wrapping material of Fig. 2;

25 Fig. 4 is a diagrammatic plan view, on a larger scale than Fig. 3, of a portion of the "a" surface of the web of wrapping material of Fig. 2;

Fig. 5 is a diagrammatic end view of the first form

of the web of wrapping material, and the web of interleaving material as they are unwound from the reel;

Fig. 6 is a diagrammatic perspective view of a food product on a sheet of the wrapping material that has been severed from the web of Figs. 2 to 4;

Fig. 7 is a diagrammatic perspective view of the food product of Fig. 6 being wrapped in the sheet of wrapping material in accordance with the first form of the method of the invention;

Fig. 8 is the view of Fig. 7 but at a later stage in the method;

Fig. 9 is a diagrammatic perspective view of the food product of Figs. 7 and 8 when wrapped in accordance with the first method of the invention;

Fig. 10 is a diagrammatic plan view of a portion of the "b" surface of the second form of web of wrapping material;

Fig. 11 is a diagrammatic plan view of a portion of the "a" surface of the web of wrapping material of Fig. 10;

Fig. 12 is a diagrammatic perspective view of a food product being wrapped in a sheet of wrapping material severed from the web of Figs. 10 and 11 in accordance with the second method of the invention;

Fig. 13 is a diagrammatic perspective view of the food product of Fig. 12 when wrapped in accordance with the second method of the invention;

Fig. 14 is a diagrammatic plan view of a portion of

the "b" surface of the third form of web of wrapping material; and

Fig. 15 is a diagrammatic plan view of a portion of the "a" surface of the third form of web.

5 Referring to the accompanying drawings, and initially to Fig. 1, a web of wrapping material, indicated generally by the reference numeral 1, is wound onto a reel 2 together with a web of interleaving material 3. The web of wrapping material 1 has printed
10 on each of its surfaces 1a (which constitutes its "a" surface) and 1b (which constitutes its "b" surface), respectively, as shown in Fig. 2, areas, indicated generally by the reference numerals 4 and 5, respectively, to which a cold-seal adhesive 6 has been
15 applied. A series of areas 4', which are blank (that is to say, they have no cold-seal adhesive on them), extends along the central portion of the surface 1a. A further series of blank areas 5' extends along the central portion of the surface 1b. The cold-seal adhesive 6 is a
20 natural or synthetic rubber latex composition, which is applied by printing it in the form of an aqueous dispersion on the wrapping material and allowing it to dry. After it has been applied to the wrapping material 1 the cold-seal adhesive will adhere to itself (on a
25 different part of the wrapping material) at ambient temperatures. The web of interleaving material 3, which is a film of polyester or polypropylene, or a paper having "release" or "non-stick" silicone surfaces,

separates the surface 1a of each winding of the web of wrapping material 1 on the reel 2 from the surface 1b of the adjacent winding of the web of wrapping material, and thus prevents the areas 4 and 5 on those surfaces to which the cold-seal adhesive 6 has been applied from adhering together while on the reel 2.

As can be seen in Fig. 3, the areas 5 of the surface 1b of the web of wrapping material 1 to which the cold-seal adhesive 6 has been applied consist of strips 5a extending along each edge portion of the web and strips 5b extending transversely across the web. Broken lines C indicate the lines along which the web of wrapping material 1 is severed into sheets for wrapping food products in the method described below. The "b" surface 1b of the web 1 forms the "b" surface of each sheet of wrapping material and the inner surface of a pack formed by wrapping the sheet around a food product as described below.

As can be seen in Fig. 4, the areas 4 of the surface 1a of the web of wrapping material 1 to which the cold-seal adhesive 6 has been applied consist of a predetermined repeating pattern 4a of projecting and re-entrant portions (which will be described in further detail below) extending along each edge portion of the web, and strips 4b extending transversely across the web. Broken lines C again indicate the lines along which the web of wrapping material 1 is severed into sheets for wrapping food products. The "a" surface 1a of the web 1

forms the "a" surface of each sheet and the outer surface of a pack formed by wrapping the sheet around a food product.

When the web of wrapping material 1 is to be used
5 for wrapping food products, for example, the food product 7 shown in Fig. 6, which is an assembly of biscuits arranged substantially co-axially, the wrapping material 1 and the interleaving material 3 are unwound from the reel 2 (as shown in Fig. 5). The interleaving material 3
10 is rewound onto a reel 8. As the wrapping material 1 is unwound from the reel 2 it is severed into sheets 9 along the cutting lines C, each sheet having an "a" surface 9a (which was the surface 1a of the web) and a "b" surface 9b (which was the surface 1b of the web). Each "b"
15 surface 9b of the sheet 9 has strips 5a of cold-seal adhesive along each lateral edge 9c and strips 5b of cold-seal adhesive along each severed edge 9d. The food product 7, which can be regarded as of generally cylindrical configuration and is of a length less than
20 the width (perpendicular to the edges of the web 1) of the blank central portion 4' of the surface 9a and of a circumference less than the length of the sheet (the distance between adjacent cutting lines C), is laid on the "b" surface 9b of the sheet 9 with its axis extending
25 parallel to the severed edges 9d of the sheet. To form a pack, the sheet 9 is then wrapped around the food product 7 and the "b" surfaces of the portions of the sheet extending along the severed edges 9d are brought into

contact with each other and the areas of cold-seal adhesive 5b are pressed together to form a longitudinal seam in the form of a "fin" seal 10 as shown in Fig. 7. Thus, the sheet 9 forms a tube of greater length than the food product 7 around the product with its "b" surface innermost and its "a" surface outermost.

As will be seen in Fig. 7, the strip 4b of cold-seal adhesive extends along one outer surface of the fin seal 10 and on an adjacent area of the "a" surface of the curved surface of the tube. The seal 10 is folded and pressed flat onto the curved surface of the tube as shown in Fig. 8, and thereby caused to adhere to that surface.

The portions of the sheet 9 adjacent to the open ends of the tube are then folded and pressed flat onto the end surfaces of the food product 7 as shown in Fig. 9. The configuration of the areas 4a of cold-seal adhesive 6 on the "a" surface of the sheet 9 is such that they comprise substantially all that part of the "a" surface of the sheet 9 that is to be folded flat onto the end surfaces 7 of the food product and that is not intended to be exposed to the exterior, on folding. Thus, the "a" surface of each fold, except for that part exposed to the exterior, adheres to the "a" surface of each adjacent layer. The strip 5a on the "b" surface of each end portion ensures sealing of adjacent "b" surfaces to each other. Thus, a pack with sealed end closures 11 is formed.

With reference to Figs. 10 to 13, in the second form

of the method of the invention, a web of wrapping material, indicated generally by the reference numeral 12, is wound together with a web of interleaving material (not shown) onto a reel (not shown) in a similar manner to that shown in Fig. 1 and in the first form of the method. On its "b" surface 12b as shown in Fig. 10, the web 12 has areas, indicated generally by the reference numeral 13, to which cold-seal adhesive 14 has been applied and central blank areas 13' on which there is no cold-seal adhesive. The areas 13 of cold-seal adhesive consist of strips 13a extending along the edge portions of the web 12 similarly to the web 1, but strips 13b extending transversely across the web 12 are arranged on one side only of cutting lines C' along which the web 12 is severed into sheets. Similarly, on its "a" surface 12a (see Fig. 11), the web 12 has a strip 15b of cold-seal adhesive on only one side of the cutting lines C' (the opposite side to the strip 13b on the surface 12a). Areas 15a of cold-seal adhesive 14 in a predetermined repeating pattern of projecting and re-entrant portions extend along the edge portions of the "a" surface 12a of the web 12, which also has central blank areas 15'.

In the second form of the method of the invention, the web 12 is severed into sheets 17 along the cutting lines C' and wrapped around a food product 18 as shown in Fig. 12 so that the strip 13b on inner "b" surface 17b of the sheet 17 overlaps the strip 15b on outer "a" surface 17a. The strips 13b and 15b are pressed together to form

a longitudinal seam 19 (see Fig. 13). End closures indicated generally by the reference numeral 20 are then formed by folding in opposite portions 20a, thus forming flaps 20b. The flaps 20b are then pressed flat onto the end surfaces of the food product 18. The configuration of the areas of cold-seal adhesive 15a is intended to be such that, when the end portions of the sheet 17 are folded and pressed flat as described above, substantially all that area 15a of the "a" surface of the sheet is within the folds (that is to say, it is not exposed to the exterior) and adjacent "a" surfaces adhere together. Adjacent "b" surfaces of the folds are also caused to adhere together because of the strips 13a of cold-seal adhesive on the "b" surface of the sheet 17.

With reference to Figs. 14 and 15, in the third form of the method of the invention, a web of wrapping material, indicated generally by the reference numeral 21, of heat-sealable material has on its "b" surface 21b (see Fig. 14) areas 22 to which cold-seal adhesive has been applied consisting of strips 22a extending along each edge portion of the web. The strips 22a are interrupted by blank areas 22b having no cold-seal adhesive on them. The web 21 also has a blank area 22' extending along the central portion of the surface 1b. Broken lines C" indicate the lines along which the web 21 is severed into sheets.

The web 21 has on its "a" surface 21a (see Fig. 15) areas 23 to which cold-seal adhesive has been applied and

a central blank area 23'. The areas 23 of cold-seal adhesive consist of strips 23a extending continuously along each edge portion of the web 21.

In the third method of the invention, the web of
5 wrapping material 21 is wound onto a reel in a similar manner to that shown in Fig. 1 and is unwound, when required, and severed into sheets along the cutting lines C". A food product (not shown) is placed on the "b" surface of a sheet and the sheet is wrapped around the
10 food product to form a tube, the portions of the sheet adjacent to the severed edges being brought into contact with each other and heat-sealed together to form a longitudinal seam. That seam can either be formed with the "b" surfaces of the portions in contact with each
15 other to form a fin seal, or with the "b" surface of one of the portions in contact with the "a" surface of the other. The portions of the sheet adjacent to the open ends of the tube are then folded and pressed flat onto the end surfaces of the food product in the manner of the
20 second method as shown in Fig. 13, to form a sealed pack, the end portions being formed by folding in opposite portions similar to the portions 20a shown in Fig. 13, the "b" surface of which is intended to coincide with the blank areas 22b so that contact between the cold-seal
25 adhesive on the "b" surface and the food product is avoided or kept to a relatively small area. Flaps, similar to the flaps 20b, resulting from those folds are then pressed flat onto the end surfaces of the food

product, and adjacent portions of the "a" surface are caused to adhere together by means of the strips 23a of adhesive on that surface. Small portions of the cold-seal adhesive strips 23a will be exposed to the exterior, but those portions are not of a sufficient extent that, if adhesion were to occur between adjacent end surfaces of adjacent packs, one or each of the packs would be caused to open when the packs were separated from each other.

10 Instead of folding the open ends of the tube in the manner of the second method, they may be folded in the manner of the first method as shown in Fig. 9. In that case, the configuration of the strips 22a and the blank areas 22b are adjusted to correspond with the different configuration of the end folds.

15 In the first and second forms of the method described above, the strips 5a and 13a, respectively, of cold-seal adhesive on edge portions of the "b" surfaces may also be interrupted by blank areas arranged as
20 described above with reference to Figs. 14 and 15.

Claims:

1. A method of wrapping a food product, which comprises unwinding from a reel a web of wrapping material having on each of its surfaces (hereinafter referred to as its "a" and "b" surfaces, respectively) areas to which a cold-seal adhesive (as hereinbefore defined) has been applied, the web of wrapping material having been wound onto the reel together with a web of interleaving material so that the cold-seal adhesive on the "a" surface of each winding of the wrapping material is separated from, and prevented from adhering to, the cold-seal adhesive on the "b" surface of the adjacent winding of the wrapping material, the areas of the wrapping material to which the cold-seal adhesive has been applied extending along each edge portion of each of the "a" and "b" surfaces of the web with one or more blank areas, to which no cold-seal adhesive has been applied, extending along the central portion of each of the "a" and "b" surfaces, and the method also comprises severing the web transversely at predetermined intervals along its length into sheets, wrapping each sheet around the food product with its "a" surface facing outwards and its "b" surface facing inwards, sealing to each other the portions of the sheet adjacent to the severed edges of the sheet to form a longitudinal seam extending along the length of the food product and thereby form a tube of greater length than the food product around the product, and folding and pressing the portions of the wrapping

material adjacent to the open ends of the tube, which portions have cold-seal adhesive on at least a part of each of their "a" and "b" surfaces, flat onto the end faces of the food product to form sealed closures at each
5 end.

2. A method as claimed in claim 1, wherein the area of cold-seal adhesive extending along each edge portion of the "a" surface of the web of wrapping material is a strip of substantially constant width.

10 3. A method as claimed in claim 1, wherein the areas of cold-seal adhesive extending along the edge portions of the "a" surface of the web of wrapping material are substantially all that part of the "a" surface of the wrapping material that, when the web is
15 severed into sheets, is to be folded flat onto the end surfaces of the food products and is not to be exposed to the exterior when the sealed closures are formed.

4. A method as claimed in any one of claims 1 to 3, wherein the area of cold-seal adhesive along each edge
20 portion of the "b" surface of the web of wrapping material is a strip of substantially constant width.

5. A method as claimed in any one of claims 1 to 4, wherein the longitudinal seam extending along the length of the food product is formed by heat-sealing
25 together the portions of the sheet adjacent to the severed edges of the sheet.

6. A method as claimed in any one of claims 1 to 4, wherein the areas of the wrapping material to which

the cold-seal adhesive has been applied include portions of the surfaces of the web adjacent to lines along which the web is to be severed into sheets, and the longitudinal seam is formed by bringing into contact with each other, and pressing together, the "b" surfaces of the said portions.

7. A method as claimed in any one of claims 1 to 4, wherein the areas of the wrapping material to which the cold-seal adhesive has been applied include portions of the surfaces of the web adjacent to the lines along which the web is to be severed into sheets, and the longitudinal seam is formed by pressing the "b" surface of one such portion onto the "a" surface of the other.

8. A method as claimed in claim 6, wherein the "a" surface of the web also has an area of cold-seal adhesive on it in the form of a strip extending transversely across the web on one side of the said lines, and after a sheet is severed from the web and the "b" surfaces of the portions adjacent to the severed edges of the sheet are brought into contact with each other to form a tube around the food product, the "a" surface of one of those edge portions is caused to adhere to an adjacent area of the "a" surface of the sheet that forms part of the curved surface of the tube.

9. A method as claimed in any one of claims 1 to 8, wherein the cold-seal adhesive is a latex composition.

10. A method as claimed in any one of claims 1 to 9, wherein the cold-seal adhesive is applied to the said

areas of the "a" and "b" surfaces of the wrapping material by printing it on the said surfaces in the form of an aqueous dispersion and allowing the surfaces to dry.

5 11. A method as claimed in any one of claims 1 to 10, wherein the interleaving material is a polyester or polypropylene film.

10 12. A method as claimed in any one of claims 1 to 10, wherein the interleaving material is a paper having silicone surfaces.

15 13. A method of wrapping a food product substantially as hereinbefore described with reference to Figs. 1 to 9, or with reference to Figs. 10 to 13, or with reference to Figs. 14 and 15, of the accompanying drawings.

20 14. A web of wrapping material for a food product, the web having on each of its "a" and "b" surfaces areas to which a cold-seal adhesive (as hereinbefore defined) has been applied, the web of wrapping material being wound together with a web of interleaving material onto a reel so that the cold-seal adhesive on the "a" surface of each winding of the wrapping material is separated from, and prevented from adhering to, the cold-seal adhesive on the "b" surface of the adjacent winding of the wrapping material by the interleaving material, the areas of the
25 wrapping material to which the cold-seal adhesive has been applied extending along each edge portion of each of the "a" and "b" surfaces of the web with one or more

blank areas, to which no cold-seal adhesive has been applied, extending along the central portion of each of the "a" and "b" surfaces, and the arrangement of the wrapping material is such that, when the web of wrapping material is unwound from the reel and severed transversely at predetermined intervals along its length into sheets, each sheet is wrapped around a generally cylindrical food product of a length equal to or less than the width (perpendicular to the edges of the web) of the blank central area on the "a" surface and a circumference less than the length of the sheet, the sheet being wrapped around the food product with its "a" surface facing outwards and its "b" surface facing inwards, and the portions of the sheet adjacent to the severed edges of the sheet are sealed to each other to form a longitudinal seam extending along the length of the food product and thereby form a tube of greater length than the food product around the product, the portions of the wrapping material adjacent to the open ends of the tube, which portions have cold-seal adhesive on at least a part of each of their "a" and "b" surfaces, can be folded and pressed flat onto the end faces of the food product so as to form sealed closures at each end.

15. A web of wrapping material as claimed in claim 14, and suitable for use in a method as claimed in any one of claims 1 to 13.

16. A web of wrapping material substantially as hereinbefore described with reference to, and as shown in

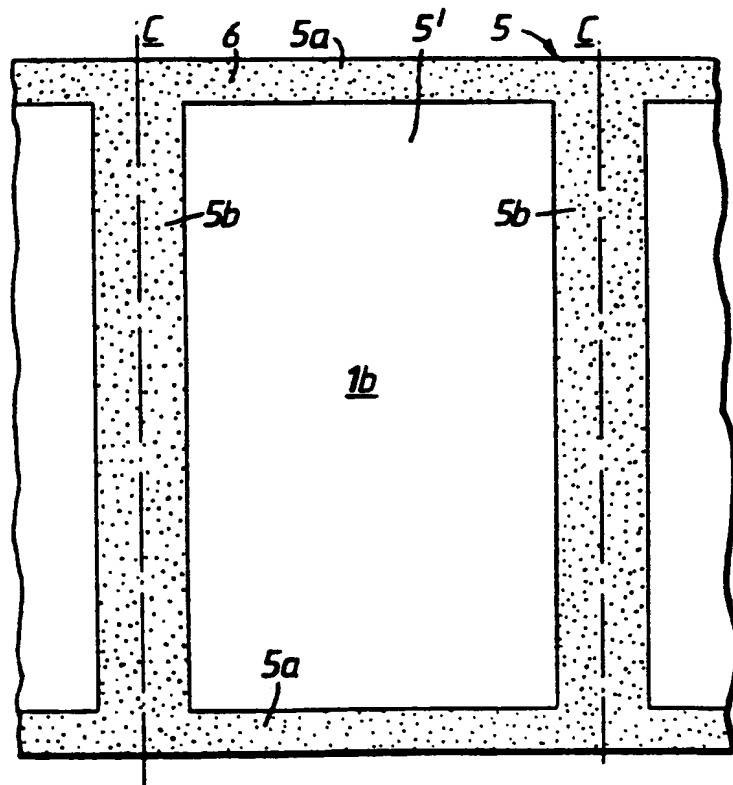
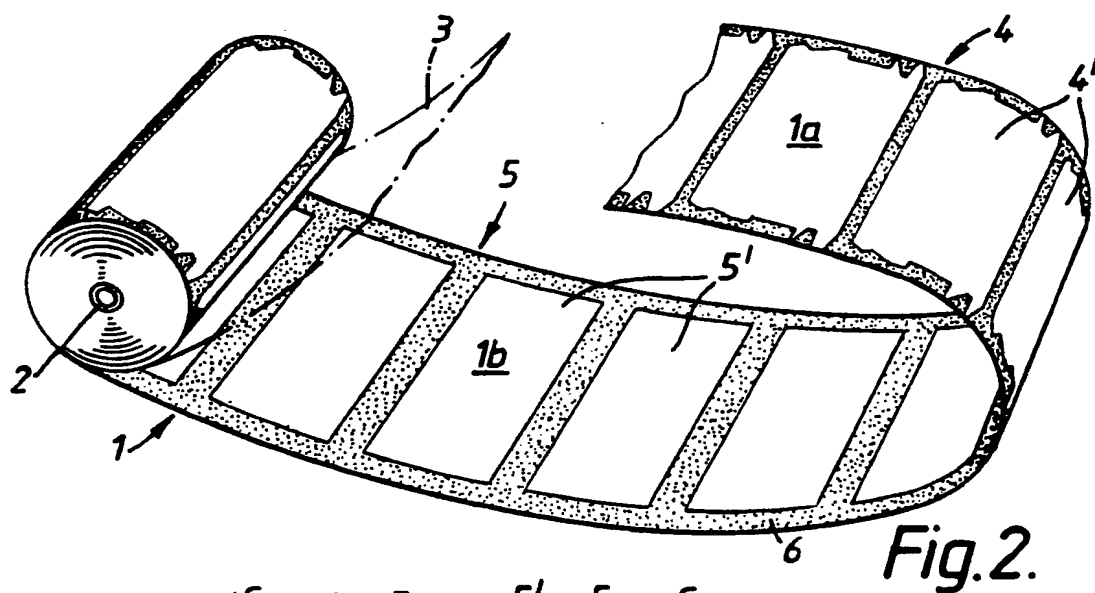
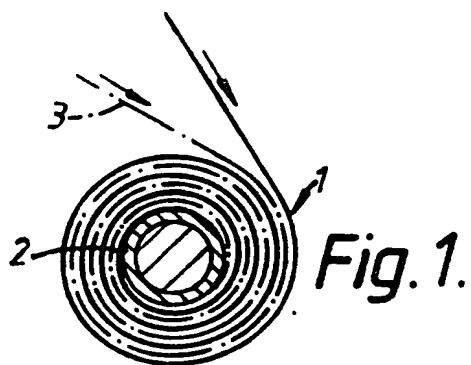
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Figs. 1 to 9, or Figs. 10 to 13, or Figs. 14 and 15, of the accompanying drawings.

17. A food product wrapped by a method as claimed in any one of claims 1 to 13.

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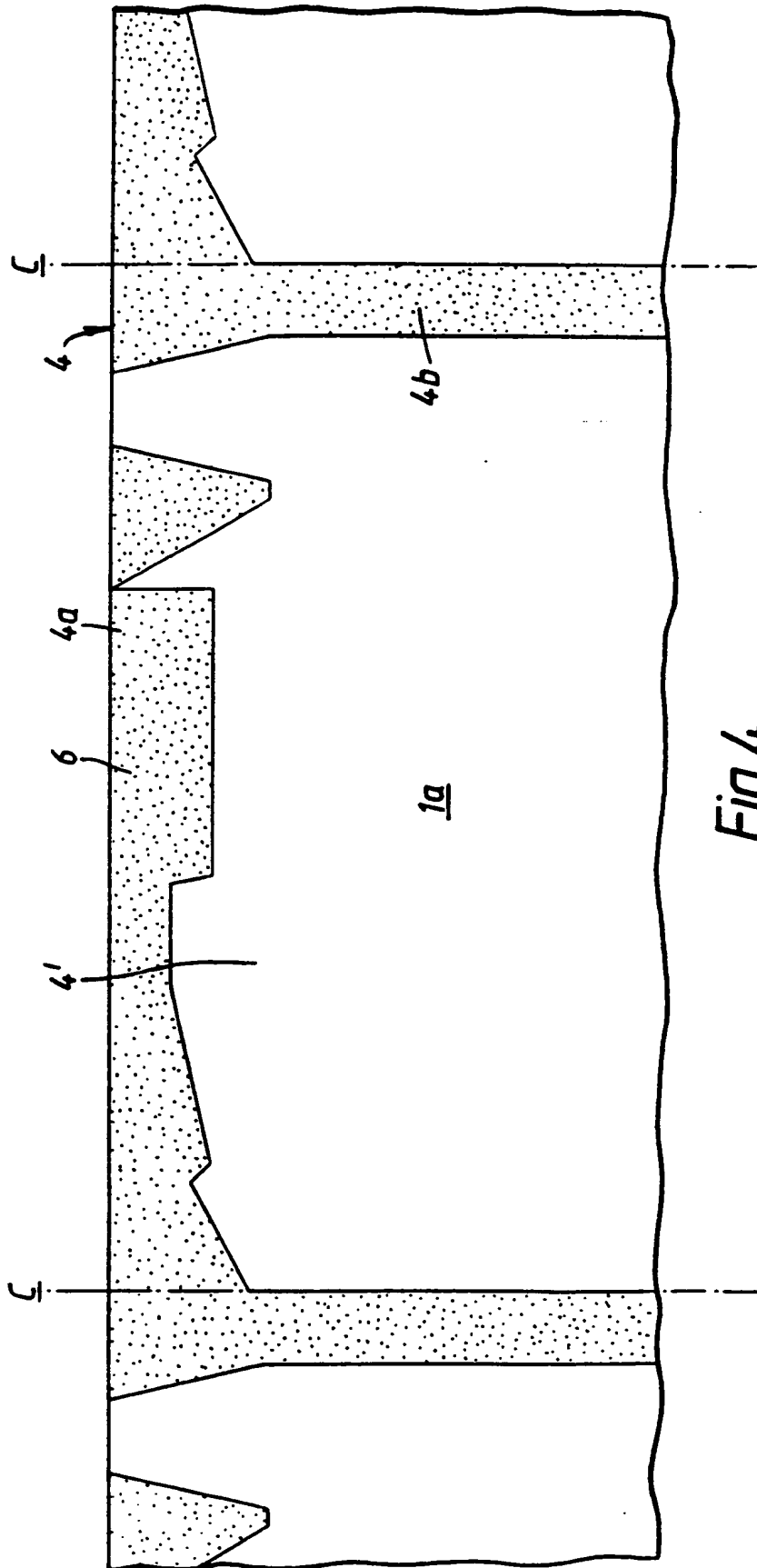


Fig. 4.

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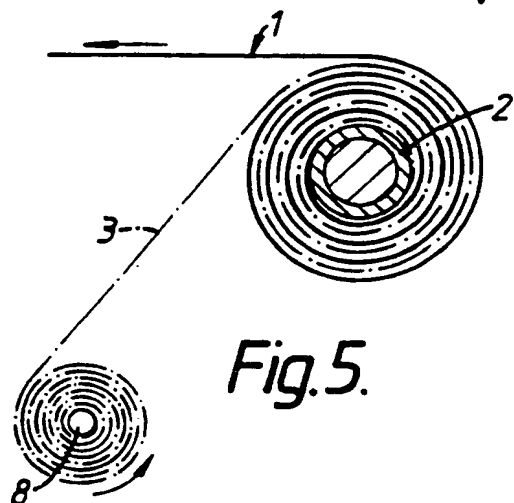


Fig. 5.

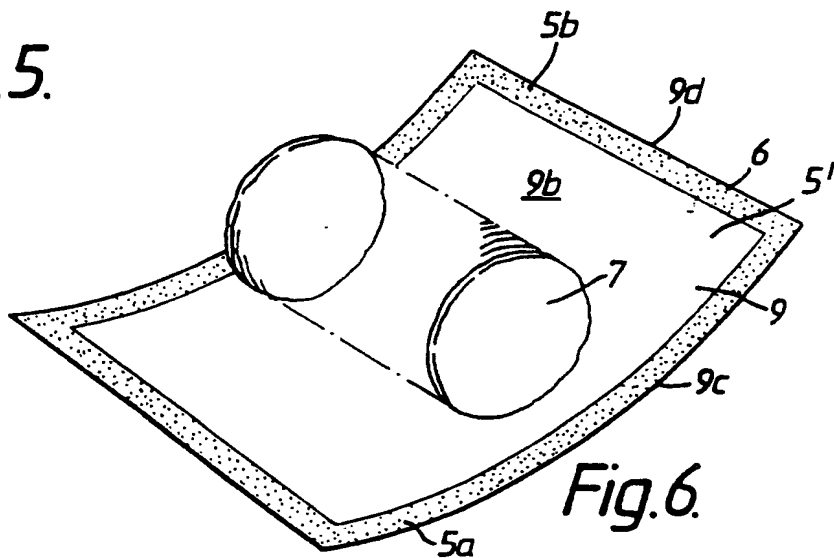


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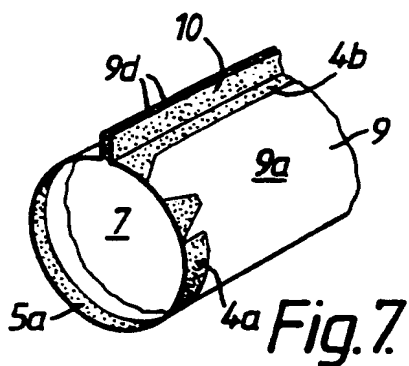


Fig. 7.

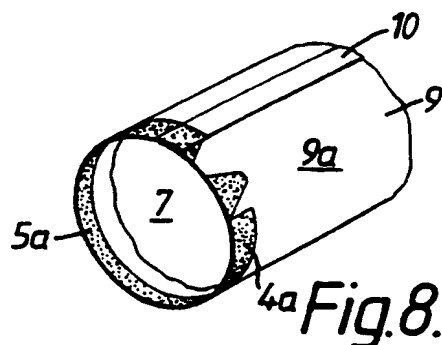


Fig. 8.

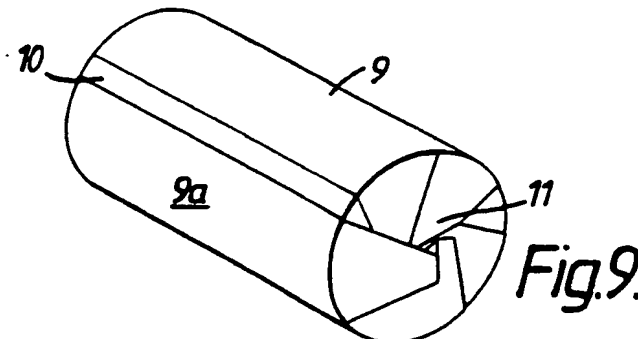
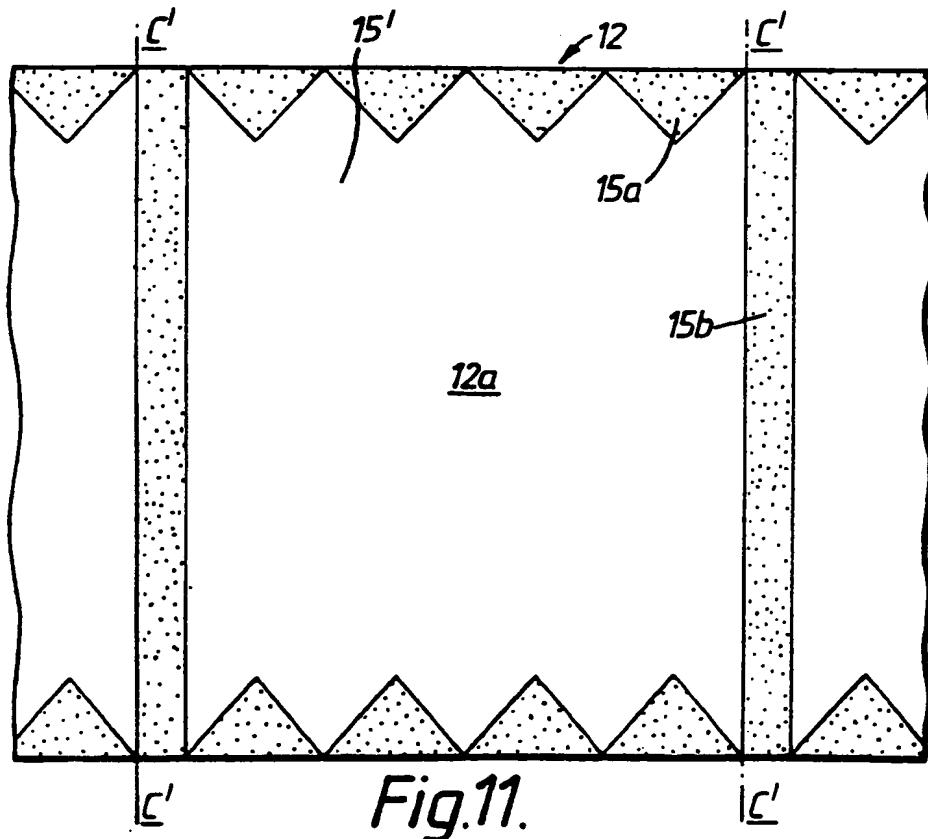
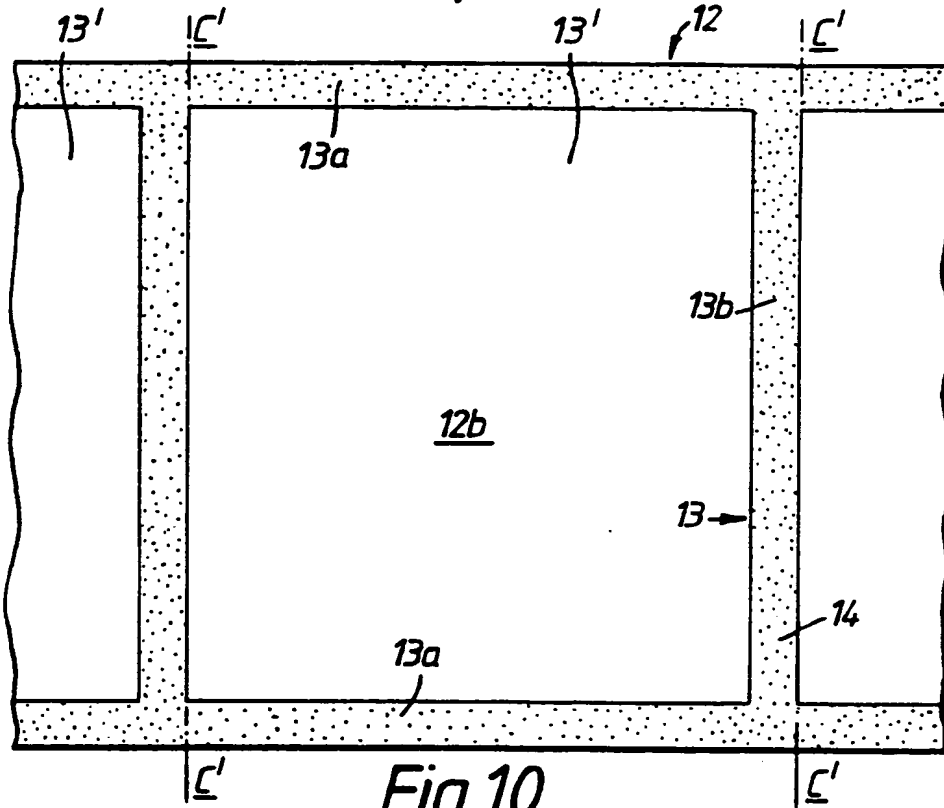


Fig. 9.

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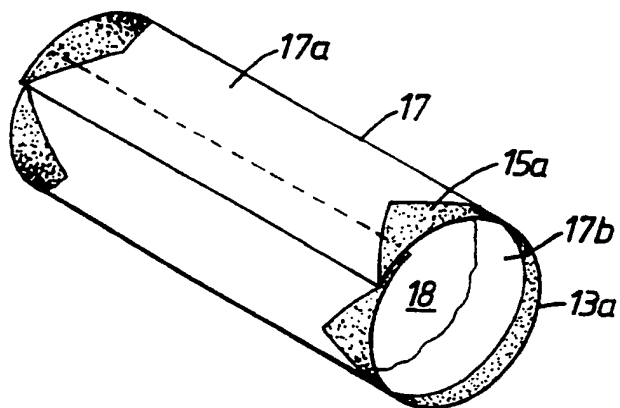


Fig. 12.

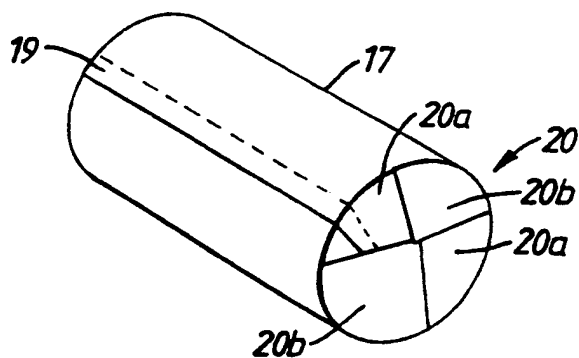


Fig. 13.

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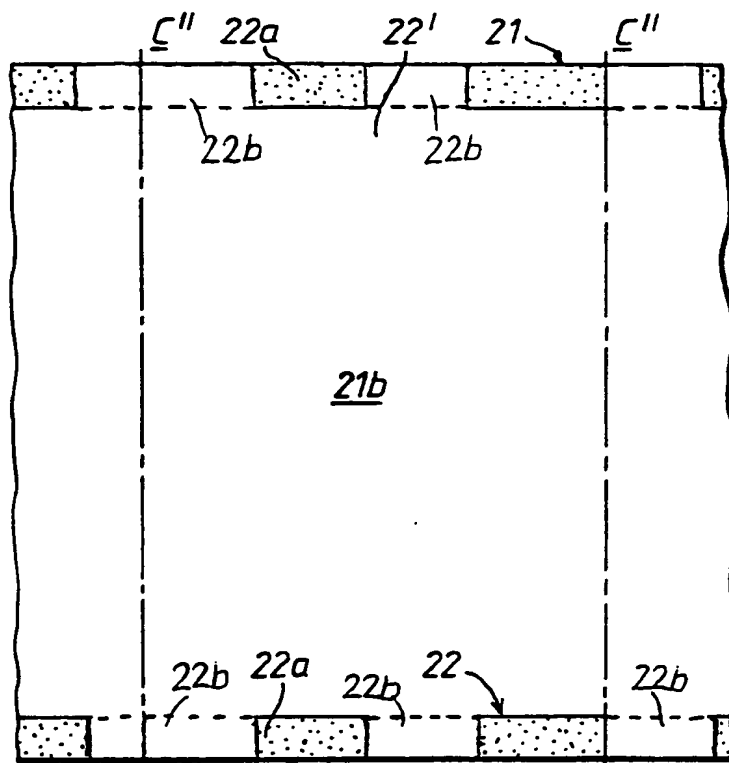


Fig.14.

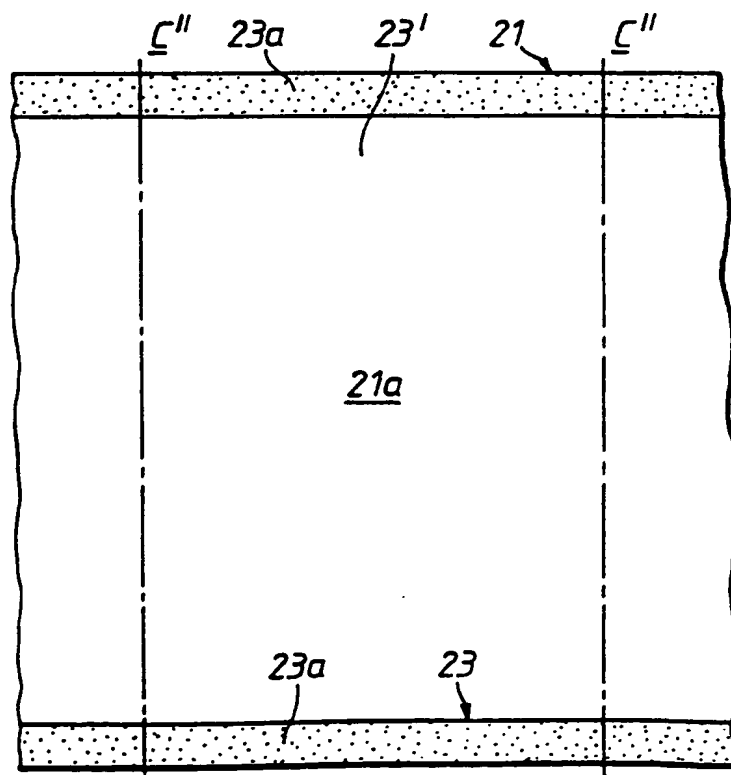



Fig.15.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 92/00808

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 B65D65/14		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	B65D	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	EP,A,0 225 987 (UNILEVER) 24 June 1987 see column 1, line 1 - column 2, line 27; figures 1-3 ---	1-4, 6-8, 14-17
A	CH,A,598 080 (WEBER) 28 April 1978 see column 1, line 18 - column 2, line 7 ---	1, 12, 14-17
A	US,A,3 311 289 (FRENCH) 28 March 1967 see column 3, line 20 - column 4, line 4; figures 1-5 ---	1-7, 14-17
A	GB,A,211 783 (ROSE) 20 March 1924 see page 2, line 1 - line 87; figures 1-4 ---	1, 14
<p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
26 AUGUST 1992	14 SEP 1992	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	VANTOMME M.A. 	

Form PCT/ISA/210 (second sheet) (January 1985)

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

GB 9200808
SA 58996

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 26/08/92

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0225987	24-06-87	DE-C- 3544384	09-07-87
CH-A-598080	28-04-78	None	
US-A-3311289		None	
GB-A-211783		None	

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